Moa Citings

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Abstract
The archaeological consensus is that all species of Moa (*Dinornithiformes*) have been extinct for three or four centuries. Yet these giant birds still enjoy a vigorous and prolific afterlife in New Zealand's literature, art, historiography and popular culture. Arguing that narratives about moa function as myths, in the sense given that term by Roland Barthes, this essay analyses their deployment in the construction of theories about human settlement in New Zealand, and about the development of an endemic (Māori) culture. I suggest that a shift occurred, during the second half of the twentieth century, from a moa mythology based on theories of racial hierarchy to one based on theories of evolutionary ecology. I then consider the ideological investments of the currently dominant theories about moa, and conclude by contrasting these with the very different kinds of affect evoked by accounts of live moa sightings.

Keywords
Moa, New Zealand, evolutionary ecology, protein, indigenous, Allen Curnow, Tim Flannery.

I

Archaeologists maintain that all moa species have been extinct for three or four centuries.[1] Not everyone agrees. But whether or not moa are biologically speaking long dead, culturally speaking they seem to be enjoying a vigorous after-life. Indeed they have gone quite feral. You can spot them in the most unexpected places. Visitors arriving at Auckland Airport will pass a flock of three on their way out of the car park. There's another life-sized one in the middle of Queenstown, with a sign prohibiting tourists from climbing on its back. The Bealey Hotel in Arthur's Pass has a lone specimen standing very tall out the front, and a couple more nesting

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Vol 45(3): 325–339. DOI: 10.1177/0021989410376799

in a back paddock. Images of moa appear on road-signs in the Canterbury high country and in the Christchurch suburb of Redcliffs – as though at any moment a pair could lumber in front of your car. And they are multiplying elsewhere too: in coffee-table books and on TV, in kids' stories and board games. They have infiltrated the canvases of artists, found their way onto beer bottles and even ventured into the perilous realm of online gaming.[2] Why so many moa? How can we account for the longevity and ubiquity of the big birds, like a kind of avian undead in our cultural imagination?

The first and most obvious answer is that in New Zealand, a country devoid of large native terrestrial mammals, the moa fulfils the role of charismatic megafauna. No doubt this partly explains why, in the late nineteenth and early twentieth centuries, the moa featured as the totem animal of the fledgling British colony. Kennett Watkins' *Haunt of the Moa*, painted in 1885, portrays a primeval Puriri forest as a hall of arboreal columns, carpeted with grass and flowers, where moa may safely graze – although one is just looking up, half-aware that naked human hunters are approaching from the distance at the far right of the canvas.[3] A more fanciful image by J.E. Ward, published in the *Auckland Star* newspaper early in the twentieth century, shows a standard background of misty-alps-mirrored-in-a-crystal-lake, while in the foreground a Māori maiden and chief are leading a harnessed moa; their three children ride on the bird's back and the youngest boy, with an impressive display of balance, is performing a haka.[4] Both artists are investing in the imaginary realm known as Maoriland, a primordial wilderness populated by ancient species (avian and human), a version of the country created for the growing Victorian tourist market.[5] These associations help explain why, during the nineteenth century and the first part of the twentieth, the moa rivalled the kiwi as the primary animal totem for New Zealand.[6]

However, this fascination with the moa was also part of a larger global phenomenon: the eruption of scientific and popular enthusiasm for prehistoric animals that began in the mid-nineteenth century and continues to this day. It was around 1840 – while Darwin was framing his theory of natural selection – that moa were first recognized by science. Richard Owen, the patriarch of professional palaeontology and the founder of London's Natural History Museum, identified a bone sent from New Zealand as the remains of a "giant struthious bird", to which he allotted the scientific name *Dinornis* (prodigious bird), in imitation of his earlier coinage, *dinosaur*.[7] Moa, mammoths and megalosaurs thus strode into the cultural imagination at the very historical moment at which the life sciences were joining battle with the forces of religious orthodoxy. This helps to account for our enduring investment in prehistoric species: theories about them, and the accompanying notions of evolution and extinction, were (and remain) powerful weapons in the conflict over what counts as the truth about the natural world.

At the same time as they provoke scientific inquiry, though, extinct species also inspire fantasy and invite the projection of cultural values. We have never seen them in the flesh, so they exist for us only as competing constructions, based on ambiguous traces left in bone and stone. As creatures of interpretation they are inevitably shaped by our shared preconceptions and taken-for-granted assumptions. Certainly the moa were no sooner called back from oblivion than they were weighed down with human meanings – just as J.E. Ward's Maoriland fantasy makes *Dinornis* a long-necked beast of burden. Moreover the kinds of significance borne by moa were dictated by the historical moment of their rediscovery, which was also that of New Zealand's creation as a British colony. Again, it was around 1840 that accounts of moa were first recorded by William Colenso, who is primarily remembered in New Zealand history for his key role in, and eyewitness account of, the signing of the Treaty of Waitangi.[8] Summoned up at the same historical moment as the fledgling colony, the moa remained harnessed to its social politics, economics and cultural identity.

II

Experts have identified many species of *Dinornithoformes*, of different sizes and shapes. And they stress that the birds most likely held their necks curved in front of their bodies rather than stretched up high: as the most comprehensive recent study puts it, "[m]oa were very long birds, not tall ones".[9] Nevertheless the original, and still the predominant, image of the moa is that of an upright biped standing two metres or taller.

All moa species were flightless – indeed the characteristics that allow birds to become airborne were, in the moa, reversed. Instead of being hollow, their bones were filled with marrow, and they had flat sternums instead of the keel-shaped breastbones required to support flight muscles. The barbicels that lock feathers together into rigid vanes for flying were absent in moa plumage, which hung in fine filaments, designed for warmth and shelter from the rain. They had no tail. Finally, unlike any other bird – unlike even other flightless species such as their little relative, the kiwi – moa were utterly devoid of wings.[10]

Two-legged, tailless, wingless, clad in woolly fibres: in some Māori accounts the moa was also said to have a human face and to live in a cave.[11] The anthropomorphic portrayal of the moa was part of a larger and more complex process whereby the bird came to stand for an authentic, unique and indigenous population of these islands: a totem of New Zealand endemicity.[12]

In one of the best-known of all New Zealand poems, "The Skeleton of the Great Moa in Canterbury Museum, Christchurch", from 1949, Allen Curnow used the moa as a framework on which to hang his reflections

on mid-twentieth-century national identity:

> The skeleton of the moa on iron crutches
> Figures in no wasteland; a private swamp
> Was where this tree grew feathers once, that hatches
> Its dusty clutch, and guards them from the damp.
>
> Interesting failure to adapt on islands,
> Taller but not more fallen than I, who come
> Bone to his bone, peculiarly New Zealand's.
> The eyes of children flicker round this tomb
>
> Under the skylights, wonder at the huge egg
> Found in a thousand pieces, pieced together
> But with less patience than the bones that dug
> In time deep shelter against ocean weather:
>
> Not I, some child, born in a marvellous year,
> Will learn the trick of standing upright here.[13]

The final couplet depends on an unspoken reference (pervasive in Curnow's poetry) to the convention of the antipodes as a world-turned-upside-down. "Standing upright" in such a place is at the same time a marvel and a trick – a reversed reflection of the moa's uprightness, which was once natural but is now an artifice effected by "iron crutches". The poet wistfully imagines a future in which the Pākehā might not fail to adapt, might achieve a self-sufficient, freestanding endemicity. Yet the very articulation of this mature settler identity betrays its artificiality, the props that hold it upright: the scaffolding of archaeological reconstruction, the dependence upon identification with prior inhabitants of these islands.

III

Curnow's poem is a virtuoso performance of these contradictory associations but it doesn't invent them: they are already familiar by the start of the twentieth century. Within a few decades of its discovery by European settlers the moa had become central to a dominant theory of colonial history and New Zealand identity.

In the 1860s Julius von Haast – explorer, geologist and founder of the Canterbury Museum in Christchurch, and the man under whose direction the moa skeleton in Curnow's poem was assembled – advanced the theory that New Zealand had been inhabited by a pre-Māori people. Naming these first human inhabitants the "Moa-hunters", Haast modelled his portrayal of their palaeolithic culture on the Ice Age mammoth hunters of Europe. Although Haast himself considered the Moa-hunters to be Polynesian in origin, his two-people theory of New Zealand colonization was later extended and reinforced through combination with another idea,

one deriving from European interpretations of selected Māori traditions. This was the notion that the first human settlers in New Zealand were a people called the Maruiwi or Mouriuri, who were of Melanesian descent, and were subsequently displaced by the later Polynesian ancestors of the Māori. The key figures in the blending together of Haast's palaeolithic moa-hunters and the non-Polynesian Maruiwi were Edward Tregear, Percy S. Smith, Elsdon Best and Peter Buck (Te Rangi Hiroa).[14] As well as holding high public office, these men were all prominent ethnographers, and they were the most influential gatekeepers of knowledge about Māori and New Zealand history:

> It was Tregear who first "discovered" that Māori were part of the Aryan Great Migration whereby one group of peoples left the Aryan heartland near the Caspian Sea and went westwards eventually to found the great civilisations of Greece, Rome and now Europe, while another group moved south through India and beyond into the Pacific. Now these two "vast horns of the Great Migration have touched again" in New Zealand, where the "Aryan of the West greets the Aryan of the Eastern Sea".[15]

Tregear's model was consistent with an influential strain in nineteenth-century racial theory, which insisted that cultural advancement in human history came only from the diffusion of Aryan influence.[16] Moa and moa-hunting were therefore central to the development of an historical model that portrayed New Zealand as the site of successive waves of human colonization, each more Aryan than the last. First came the Maruiwi, "a primitive, Palaeolithic, nomadic, moa-hunting people", whom Elsdon Best described (citing Māori accounts) as having "flat noses, distended nostrils, bushy hair, and restless eyes".[17] They were "replaced by a superior, Neolithic, agricultural people", the Māori, whose Caucasian or Aryan ancestry was emphasized by Percy Smith and Peter Buck. Yet, having "subdued an existing people [and] developed an 'advanced' Polynesian culture", the Māori "now were in turn dying out" in the face of a more vigorous Aryan incursion from Europe.[18] Despite their individual doubts and their disagreements with one another about its various elements, Haast, Tregear, Smith, Best and Buck shared joint authorship of this synthetic account, which "became orthodox Maori history by the 1920s", and remained influential in popular culture well into the 1970s.[19]

IV

So the moa were made extinct by Melanesian Moa-hunters, who in turn were made extinct by Māori, who in turn would be made extinct (or assimilated) by Europeans. The simplicity, elegance and popularity of this narrative made it an important myth for the first hundred years of Pākehā settlement in New Zealand. Here I use the word "myth" in the sense given

to it by Roland Barthes: a cultural idiom that a society uses to naturalize its dearest values and assumptions. Such myths may take the form of historical narratives, images, or appeals to "common sense", but their defining feature is their claim to describe simply the way things are. For Barthes "the very principle of myth" is that "it transforms history into nature".[20]

Yet, though they appear natural in their day, such myths are not immortal. As ideologies change, the myths that embody them become endangered, and in the middle of the twentieth century two events occurred – a global cataclysm and a local upheaval – that rendered extinct the myth that emerged from the work of Haast, Tregear, Smith, Best and Buck. The local upheaval was the investigation of the archaeologically rich burial sites at Wairau Bar during the 1940s by Jim Eyles and Roger Duff (one of Haast's successors as director of the Canterbury Museum). Having identified indisputably Polynesian artifacts alongside moa remains of the same age, Duff was able authoritatively to reject the longstanding orthodoxy of the Moa-hunters as a Melanesian people who occupied New Zealand prior to, and were displaced by, the Polynesian ancestors of the Māori. Instead Duff advanced the notion of "a Moa-hunter period of Maori culture". Rather than the colonization of one (non-Aryan) race by another (Aryan) one, Duff asserted that "Moa-hunter culture merged insensibly and unconsciously into Maori culture, indeed *became* Maori culture".[21]

Duff's intervention represented a major ideological shift in New Zealand historiography: the replacement of racial difference with cultural evolution as the motor of historical change. In this sense it was shaped by the global cataclysm of World War Two, which rendered theories of racial hierarchy obsolete. Hence Duff registers "the strongest objections" to the implication that the Moa-hunters "were an inferior Melanesian people who thoroughly deserved their fate …".[22]

Scholars soon accepted Duff's thesis of a continuity between Moa-hunter and Māori culture, but the mechanism by which the former transformed into the latter remained vague. In 1967 L. M. Groube pointed out that Duff had described the kind of change that occurred between the Moa-hunter and Māori periods as "self-motivated or spontaneous", and as determined by "chance" and "accident".[23] This acceptance of unknowability and contingency – conditions that professional researchers usually find insufferable – betrays the ideological vacuum left by the abandonment of a formerly dominant grand narrative – that of the Aryan Māori conquerors of primitive Moa-hunters.

But ideology, like nature, abhors a vacuum, so over the next few decades a new myth was bound to emerge. It did so in the form of a story that reconceived the origins of Māori culture, but once again by focusing on the moa and its extinction. Thus reconceived, the moa totem remains standing today.

V

The new myth can be found in its simplest and most easily-digestible form in a 1998 television documentary entitled *The Future Eaters*, based on the book of the same name by influential Australian environmental historian Tim Flannery. Episode Two focused on New Zealand and so also drew on the authority of New Zealand's most telegenic historian, James Belich, who appeared alongside Flannery as a "talking head" expert.

This episode describes the arrival of the first Polynesian settlers in New Zealand:

> … of all the flightless creatures found in this land, there was one that amazed the first human arrivals: a walking giant that seemed to offer them the promise of food for life, and which they called therefore moa, meaning chicken…. These were the endemic megafauna of Aotearoa, the dominant herbivores…. But their reign was about to come to an abrupt end with the arrival of the people who were later to be known as Māori.
>
> …. in the early days of colonisation, the Polynesians would have fed on moa…. This abundance of meat supported huge settlements, where people lived in peace. But then suddenly, the moa were gone.[24]

Here the voiceover ceases, while Tim Flannery comes on screen to explain that this sudden extinction occurred because the early Māori "were still newcomers", whereas "it takes a tremendously long time to build up the knowledge you need to manage resources sustainably".[25]

The voiceover resumes with a series of assertions central to the new moa myth: "As hunger began to stalk the land, Māori had no choice but to expand their farming"; "undernourishment became widespread" so hunters "moved further and further inland in search of elusive bird protein"; "For many, this was a time of hardship and hunger, but it forced Māori to organize in order to survive, and triggered a period of rapid cultural change and turmoil"; "This was the beginning of the so-called 'classical' period of Māori history".[26]

By the European sixteenth century, Flannery explains, "we start to see the first glimmerings of conservation in Māori society". Māori conservationist and farmer Kevin Prime agrees that the loss of "the one bird that could provide a feed for the whole tribe" led to "the development of a lot of Māori conservation ethics". He discusses the example of "rahui", which he describes as "a sort of a temporary, or sometimes permanent, reservation status … that sets aside certain areas to protect the species or allow the numbers to build up". Finally, James Belich reinforces the point with all the authority of his position as a pre-eminent historian of New Zealand: the emergence of "classical" Māori culture is characterized, he asserts, by "an increased use of tapu, rahui, sacred prescriptions to prevent the taking of vulnerable resources outside the appropriate times", representing a shift

"from extractive economics to sustainable economics". And the narrator sums up: Māori had "confronted the resource crisis they had created and found a new way of living", including "strict rules for enforcing the conservation of nature".[27]

This tidy narrative, with its neat moral, exemplifies the currently dominant account of pre-European Māori history.[28] The old myth of racial supremacy has been superseded by a new myth of environmentalist virtue. Instead of an inferior race of Moa-hunters wiped out by Māori Aryans, an ecologically-rapacious culture of moa-hunting evolves into an ecologically-harmonious Māoridom. The human relationship to the moa, however, remains in place as the fulcrum upon which this narrative pivots.

We can distinguish myth from other kinds of utterance, Barthes suggests, because it "abolishes the complexity of human acts" and presents "a world which is without contradictions" in which "things appear to mean something by themselves".[29] The new moa myth does precisely this. It does not emerge from a consensus among specialists, whose painstaking studies are dense with regional and temporal differences and who warn against any single or simplistic narrative about the transition from moa-hunting to classical Māori cultures.[30] The new moa myth steps clear of these thickets of local contradiction, striding fully-formed into the public consciousness. It is by thus abolishing complexity and difference that myth makes certain social values and ideologies appear to be natural, common sense, simply "the way things are".

What ideological investments are naturalized by the new moa myth? At least four are clearly distinguishable.

The most obvious one is indicated by repeated references to sustainable economics and the management of resources. Such language evokes that blend of cautious conservationism and mildly chastized capitalism which has become more or less orthodox in New Zealand society and politics. In the new moa myth, however, this position is combined with a second ideological investment: that of settlement reconceived as a process of indigenization. The new moa myth radically redefines indigeneity – a concept that has often provoked bitter dispute in New Zealand – in such a way that it becomes a state available to anyone. The parable of future-eaters-become-conservationists embodies a notion of indigeneity that has nothing to do with being the first human inhabitants of a place, but instead depends on the development of a sustainable relation to the local environment. Indigeneity becomes something that can, and must, be earned and learned by all human inhabitants of an ecology, whether Māori or Pākehā or tauiwi. This is precisely Michael King's conclusion at the end of his *Penguin History of New Zealand*, where he identifies the "most important political and social challenges of the new era" as "those surrounding the sustainable use of the country's primary resources", which

might be surmounted by learning from history, and in particular from "the cautionary examples of the 'future-eating' activities of early Maori".[31] More frankly still, King's *Being Pakeha Now* bears on its cover his assertion that "Pakeha New Zealanders who are committed to this land and its people are no less 'indigenous' than Maori"; the book illustrates the kind of commitment that constitutes indigeneity by referring to conservationist attempts to "restore an ecosystem annihilated by Maori".[32] The new moa myth plays an important role in this wider project of redefining what it means to be *people of the land* (in Māori, *tangata whenua*): to be native now requires adherence to a set of values that appears to be natural, appears to belong to no one culture in particular, but in fact coincides with the ethos of contemporary orthodox environmentalism.

The third covert investment of the new moa myth involves its deployment of a particular theoretical construct. Belich asserts that the crisis of the fifteenth century – the crisis that transformed archaic into classical Māori culture – "stemmed from a simple physical fact: the progressive extinction of big game in region after region".[33] Yet this appeal to "simple physical fact" obscures the way New Zealand prehistory and history are actually being shaped by the theory of evolutionary ecology. This theory – which is nowhere made explicit in the histories above, but is glossed by Anderson – centres on "the economics of consumer choice" and assumes that "pre-European Māori operated as optimal foragers, exploiting natural commodities in ways that expended the least effort for the greatest return", without consideration for "the sustainability of any particular resource".[34] Like its cousins, sociobiology and evolutionary psychology, evolutionary ecology represents the return of biological determinism after its period of disgrace following World War Two. As such it serves the function of myth perfectly, naturalizing certain assumptions by reading culture as biology. The character of those assumptions can be seen in Anderson's terms: to speak of "the economics of consumer choice", of "natural commodities", and of the "sustainability" of "resource[s]" is to project back into prehistory a set of contemporary assumptions that derive – once again – from commodity capitalism and conservationist environmentalism.

The shaping influence of evolutionary ecology also explains a peculiar idiom that recurs, persistently, but without justification or explanation, in the work of all the historians mentioned above. This is the notion of protein hunger. Each of the recent major histories of New Zealand refers to moa not as animals but as "protein", and to moa extinction as a "protein shortage". So, for example, Walker associates the "particular importance [of] the moa" with its role as a "source of protein";[35] King describes the environment into which the ancestors of the Māori ventured as a "larder of protein";[36] Belich refers to "a sustained protein boom";[37] Howe writes of "socio-economic crises as a result of collapses in protein supplies – with the rapid extinction of the moa".[38]

Of course, *some* kind of motive is needed to replace the evolutionary urge for racial supremacy that dominates the nineteenth-century moa-hunter myth. But why protein rather than, for instance, vitamin C or carbohydrate or selenium (an essential micronutrient in which New Zealand soils are exceptionally lacking)? Why protein hunger rather than the appetite for sex or status, or religious fervour, or tribalist zealotry? The answer, again, lies in the theory of evolutionary ecology, and in particular the model of "optimal foraging theory", which asserts (as in Anderson's account cited above) that organisms are fundamentally driven to consume the greatest amount of energy while expending the least amount of energy.[39]

But even if the reductive premises of optimal foraging theory are accepted, it seems highly unlikely that protein hunger would ever be a significant problem in a country with an extensive coastline rich in marine species, settled by a people unusually expert in agriculture, fowling and fishing. Indeed the evidence suggests that pre-European Māori were "rather healthy in comparison with many in other parts of the world". Davidson concludes that their "diet, despite considerable regional variation in content, was adequate in most if not all regions", and goes on to assert that "[p]rehistoric New Zealanders were tall muscular people even by present world standards".[40] Certainly they were more so than the scurvy Europeans who encountered them at the end of the eighteenth century: James Cook described "a strong raw-boned well made Active people rather above than under the common size …".[41] That hardly sounds like a population struggling to sustain itself on a diet lacking protein or any other essential nutrient. So, far from justifying the promotion of protein to the rank of a fundamental motive in historical change and a paradigmatic cause of the transition from archaic to classical Māori culture, both archaeological and eyewitness evidence appear to undermine it.

An alternative explanation is that the emphasis on protein hunger in New Zealand historiography has less to do with nature and more to do with the projection backwards of a very twentieth-century investment (economic, cultural and conceptual) in the farming and consumption of animal products. This investment, of course, has both a global and a local history, both of which Belich describes insightfully when he turns, in *Paradise Reforged*, to the late nineteenth century. This book opens by identifying the invention of refrigerated shipping in the 1880s as the key event that would define New Zealand's economic and cultural life for the next century. Once meat and dairy products farmed in New Zealand could be exported across the world to Britain, a "protein bridge" was constructed that intimately linked the economic, political and cultural fate of the colony to that of the mother country.[42] As Belich points out, the British had long associated heavy consumption of meat and dairy products with high social status, so that the rise in upper working-class and middle-class

incomes following the industrial revolution brought an increasing demand for animal protein. "The new mass consumers wanted much meat instead of little meat; prime cuts instead of scrag ends and offal; butter instead of dripping; and full-cream cheese instead of lesser varieties", and New Zealand, using the new technology of refrigeration and large steamships, was "well-placed to join the rush for the new market".[43] Yet, although Belich clearly perceives this nineteenth-century appetite for animal products as a result of cultural, social, economic and technological forces, when he writes about prehistoric New Zealand he portrays protein hunger as a force of nature; not a consequence of historical change but its cause.

So it is that all the large histories discussed here project back into prehistory an exaggerated appetite for animal protein. In so doing they naturalize the dominance of meat and dairy products in the diet, taste and economy of contemporary New Zealand (and the Western world more generally), smoothing over the conflict between this centrality of animal production and the increasingly high environmental costs it entails. This is the new moa myth's fourth ideological investment.

VI

Since 1840, science and history have summoned the moa back to life time and again. But throughout this period, other kinds of moa experiences have also been taking place. Such experiences, unlike the official moa narratives, offer no tidy moral and are subject to no easy interpretation. Controversial and disreputable, they defy the authority of expert opinion and resist the demand for empirical proof, the constant reference to rock and artifact and bone. Rather than citings of the moa as a thing of the past, dead and passive, these are sightings of the moa in the present, alive and active.

Hundreds of encounters with living moa have been reported over the last two centuries. The moa in these accounts do not stand for any stable meaning; rather they evoke a rush of feelings: wonder, fear, curiosity, fascination. They are not totems but prodigies – astonishing events, prodigious birds.

In 1842, two Americans hoping to shoot a moa were taken by a Māori guide to the mountains in Cloudy Bay, where they observed "the monster majestically stalking down in search of food", but found themselves "so petrified with horror at the sight as to be utterly unable to fire".[44] In 1859, four farm labourers recently arrived from England were "thoroughly frightened" when they stumbled upon an "enormous bird" with a "red mark around the eye".[45] In 1863, miners in the Southern Alps scattered when a ten-foot tall bird thrust its head over their campfire.[46] In 1870, another moa, seventeen feet high, "frightened the life out of" a group

of prospectors on the Rangitikei River.[47] In 1880, seven-year-old Alice McKenzie came upon a "large bird" resting in the sandhills at Martin's Bay. After she tried to yoke it with a piece of flax the bird rose and turned on her with a "harsh grunting cry". "It seemed to be as high as I was", the adult Alice recalled, "and I ran for my life …".[48]

There is something exhilarating in these accounts – perhaps because they attest to a continuing wild unpredictability in non-human nature, or in the human imagination, or in the two combined. At any rate, after 1900 moa sightings became less frequent – or at least less frequently reported in the media.[49] Perhaps the last survivors became even rarer than before; perhaps our openness to being surprised by nature dwindled. No doubt modernity's increasing reliance on empirical evidence and documentation made us dismissive of mere stories, unaccompanied by visual proof.

The last moa sighting to make a real impression was accompanied by the only (alleged) photograph of a live moa. In 1993 Paddy Freaney, publican of the Bealey Hotel in Arthur's Pass, along with his partner and a friend, claimed to have surprised a moa in the Craigieburn area. When the bird ran, Freaney followed it and took a blurry snapshot, which subsequently appeared in all the major New Zealand newspapers and can now be found on any self-respecting cryptozoology website.[50] These sites also report that image-processing experts at the University of Canterbury's Department of Electrical and Electronic Engineering concluded that the picture did indeed show a large bird. They add that, on the other hand, palaeoecologist Richard Holdaway from the same university, co-author of one of the most authoritative books on moa, dismissed the photo as "a poor image of the back end of a red deer going west".[51]

It is not the aim of this study to conclude whether or not Paddy Freaney's photo shows a live moa. But it seems salutary to put such stories alongside the theories of moa experts, because moa sightings cast doubt on whether human beings can (or should) know the natural world entirely. These stories remain open to a non-human nature more agentive, more unpredictable and more prodigious than evolutionary and ecological narratives tend to allow. And so, while the experts warn us to be sceptical of such tales, the tales in turn remind us to mistrust the overconfidence of expert discourse – to mistrust its sense of mastery, and its excessive faith in human knowledge of the world.

NOTES

1 Surveying all the evidence, Atholl Anderson concludes that moa-hunting "had ceased by 400 B.P. It is very unlikely that moas survived much longer than that", Atholl Anderson, *Prodigious Birds: Moas and Moa-Hunting in Prehistoric New Zealand*, Cambridge: Cambridge UP, 1989, pp.190-91.

2 The most striking of the coffee-table books is Alan Tennyson and Paul Martinson's *Extinct Birds of New Zealand*, Wellington: Te Papa Press, 2006. The TV programmes

include *The Mighty Moa*, dir. John Harris, Greenstone Pictures, 1998, and *Monsters We Met*, Episode 3: "The End of Eden: New Zealand – 850 Years Ago", prod. Andy Byatt, BBC, 2003. Moa-themed children's books include James Waerea, *Pukunui and his Friend Moata Moa*, Auckland: Macmillan, 1981. *The Amazing Moa Hunt* board game can be seen at www.iqideas.com. For a discussion of moa in the visual arts, see Richard Wolfe, "A Terrible Bird: The Fall and Rise of the Moa in New Zealand Art", *Art New Zealand* 82 (1997), 70-75. Among the most striking instances of moa in recent paintings are Nigel Brown's *Out of Extinction* (1992) and Caroline Williams' *Onward*, the latter reproduced on the cover of Bryce Harland, ed., *On Our Own*, Wellington: Institute of Policy Studies, Victoria University of Wellington, 1992. Ghostly moa-cellos have begun to appear in Bill Hammond's recent work: see for example *Giant Eagle* (2006) and *Ancient Pitch* (2007), both reproduced in Jennifer Hay *et al.*, *Bill Hammond: Jingle Jangle Morning*, Christchurch: Christchurch Art Gallery 2007, pp.184-5 and 194-5. For beer bottle moa see www.moabeer.co.nz. And as for online gaming: the wiki for the role-playing game *Guild Wars* describes the "moa bird" as a "charmable animal found in Ascalon after the Searing": subspecies include the elusive White Moa and the fearsome Black Moa, which is capable of inflicting "slashing damage": see www.wiki.guildwars.com/wiki/Moa.

3 Kennett Watkins, *The Haunt of the Moa* (1885), Auckland Art Gallery.

4 J.E. Ward, *Maori with Moa* (c. 1900), National Library of New Zealand.

5 See Jane Stafford and Mark Williams, *Maoriland,* Wellington: Victoria UP, 2006.

6 Richard Wolfe, *Moa*, Auckland: Penguin, 2003, pp.190-92.

7 Anderson, *Prodigious Birds*, pp.14-16. "Dinosaur" and "Dinornis" are usually translated "terrible lizard" and "terrible bird", but in relation to the moa, Owen glossed the Greek root "deinos" as "prodigious" or "surprising".

8 Anderson, *Prodigious Birds*, p.11.

9 Trevor Worthy and Richard Holdaway, *The Lost World of the Moa*, Bloomington: Indiana UP, 2002, p.163.

10 *ibid*., pp.94-5; Anderson, *Prodigious Birds*, pp.22 and 69.

11 See William Colenso, "On the Moa", *Transactions and Proceedings of the New Zealand Institute*, 12 (1880), 64.

12 Here I am borrowing W.J.T. Mitchell's idiosyncratic notion of totemism from *The Last Dinosaur Book*, Chicago: University of Chicago Press, 1998, p.78, where he suggests that thinking of prehistoric creatures as totem animals helps us recognize some of their basic cultural functions: "as symbols of the social unit (tribe, clan, or nation)"; "as ancestor figures reminding the clan of its ancient origin and descent"; "as … sacred or holy things"; "as ritual objects".

13 Allen Curnow, *Early Days Yet: New and Collected Poems 1941-1997*, Auckland UP, 1997, p.220. The poem was first published in Curnow's *At Dead Low Water and Sonnets*, Christchurch: Caxton, 1949, p.40. It is reproduced in full here with permission of the copyright holder, Jenifer Curnow, and Auckland UP.

14 M. P. K. Sorrenson, *Maori Origins and Migrations*, Auckland: Auckland UP, 1979, pp.38-52.

15 Kerry Howe, *The Quest for Origins*, Auckland: Penguin, 2003, p.168; citing Edward Tregear, *The Aryan Maori*, Wellington: George Didsbury, 1885, p.105.

16 A thesis famously advanced by Arthur de Gobineau in his *Essai sur l'inégalité des races humaine* (1853-55).

17 Howe, *Quest for Origins*, pp.164-5; citing Elsdon Best, *The Maori as He Was*, Wellington: A.R. Shearer, Government Printer, 1934, p.24.
18 Howe, *Quest for Origins*, pp.166 and 170.
19 Anderson, *Prodigious Birds*, p.107.
20 Roland Barthes, *Mythologies*, trans. Annette Lavers, London: Paladin, 1973, p.140.
21 Roger Duff, *The Moa-Hunter Period of Maori Culture*, Wellington: Department of Internal Affairs, 1950, p.197 (italics in original).
22 *ibid*., p.15.
23 L.M. Groube, "Models in Prehistory: A Consideration of the New Zealand Evidence", *Archaeology and Physical Anthropology in Oceania*, 2, 2 (1967), 9; citing Duff, *The Moa-Hunter Period*, pp.2-3.
24 Here and in the following paragraphs, quotations are transcribed from Tim Flannery and Richard Keefe, "Nomads of the Wind", episode two of *The Future Eaters*, dir. Richard Keefe, Australian Broadcasting Corporation, Natural History New Zealand and North South Productions, 1998.
25 *ibid*.
26 *ibid*.
27 *ibid*.
28 James Belich's own *Making Peoples*, Auckland: Penguin, 1996, exemplifies this consensus. "The period 1350-1600", he writes, "is widely agreed to have been a period of transition, and the time when moa died out"; moreover "Maori scholars date a great social and cultural reshuffling to the period" (p.48). In order to surmount the "crisis" caused by the extinction of the moa, "Maori transformed their economy, their politics, including warfare, and their social organization" (p.67); by means of such mechanisms as "tapu and chiefly rahui", they achieved a shift "from an extractive to a sustainable economy" (p.74). The same narrative can be seen at work in Ranginui Walker, *Ka Whawhai Tonu Matou: Struggle Without End*, Auckland: Penguin, 2004, pp.30-33; in Michael King, *The Penguin History of New Zealand*, Auckland: Penguin, 2003, pp.61-70; and in Howe, *Quest for Origins*, pp.179-82.
29 Barthes, *Mythologies*, p.156.
30 For example in *The Prehistory of New Zealand*, Auckland: Longman Paul, 1984, Janet Davidson stresses that "moa-hunting as a major economic activity" was very "regionally specific" and "less than universal" (p.219), while in *The Prehistory of Polynesia*, ed. J. Jennings, Cambridge, MA.: Harvard UP, 1979, she describes it as "unlikely that any Polynesians in New Zealand depended wholly or even largely on moas for food" (p.235).
31 King, *Penguin History of New Zealand*, pp.504-5.
32 Michael King, *Being Pakeha Now*, Auckland: Penguin, 1999, p.235.
33 Belich, *Making Peoples*, p.67.
34 Atholl Anderson, "A Fragile Plenty: Pre-European Māori and the New Zealand Environment", *Environmental Histories of New Zealand*, ed. Erica Pawson and Tom Brooking, Melbourne: Oxford UP, p.20.
35 Walker, *Ka Whawhai Tonu Matou*, pp.28-9.
36 King, *Penguin History*, p.23.
37 Belich, *Making Peoples*, p.35.

38 Howe, *Quest for Origins*, p.180.
39 R.N. Hughes, *Diet Selection*, Oxford: Blackwell, 1993, pp.1-8.
40 Davidson, *Prehistory of New Zealand*, pp.45 and 59.
41 Cited in Davidson, *Prehistory of New Zealand*, p.46.
42 James Belich, *Paradise Reforged*, Auckland: Penguin, 2001, p.53.
43 *ibid*., p.55. Similarly, in her groundbreaking study *The Sexual Politics of Meat*, New York: Continuum, 1990, pp.29-34, Carol J. Adams describes how a diet high in animal protein (and especially red meat) took on a new significance in the European nineteenth century as a marker of cultural superiority – a significance that drew on (and reinforced) social Darwinist notions of racial superiority as well as imperialist politics.
44 Colenso, "On the Moa", 69-70.
45 H.C. Field, "The Date of the Extinction of the Moa", *Transactions of the New Zealand Institute*, 26 (1893), 564, cited in Atholl Anderson, "The Beast Without: The Moa as a Colonial Frontier Myth in New Zealand", in *Signifying Animals*, ed. Roy Willis, London: Unwin Hyman, 1990, p.239.
46 *Otago Daily Times*, 23 July 1863; cited in Anderson, "Beast Without", p.239.
47 Field, "The Date of the Extinction of the Moa", p.565, cited in Anderson, "Beast Without", pp.239-40.
48 Alice McKenzie, *Pioneers of Martin's Bay*, Christchurch: Whitcombe and Tombs, 1947, p.42.
49 Bruce Spittle's three-volume *Moa Sightings* (Paua Press 2010) is available online at www.moasightings.com. The book documents 150 sightings, only seventeen of which are from later than 1900.
50 See for example Cryptomundo: http://www.cryptomundo.com/cryptozoo-news/moa-paddy/
51 *ibid*.